at1121exam_practice EXAMPLE! DO NOT HAND IN FOR CREDIT (v20)

- If you are looking for a practice exam that you can hand in for credit:

https://chadworley.github.io/algtwo2026/u04/1121/at1121exam/at1121exam.html

Question 1

Simplify the radical expressions.

$\sqrt{75}$ $\sqrt{12}$ $\sqrt{20}$

$\sqrt{5 \cdot 5 \cdot 3}$ $\sqrt{2 \cdot 2 \cdot 3}$ $\sqrt{2 \cdot 2 \cdot 5}$

$5\sqrt{3}$ $2\sqrt{3}$ $2\sqrt{5}$

Question 2

Find all solutions to the equation below:

$$\frac{(x+7)^2+6}{2} = 53$$

First, multiply both sides by 2.

$$(x+7)^2+6 = 106$$

Then, subtract 6 from both sides.

$$(x+7)^2 = 100$$

Undo the squaring. Remember the plus-minus symbol.

$$x+7 = \pm 10$$

Subtract 7 from both sides.

$$x = -7 \pm 10$$

So the two solutions are $x = 3$ and $x = -17$.

Question 3

By completing the square, find both solutions to the given equation. *You must show work for full credit!*

$$x^2 + 16x = 57$$

Take the linear coefficient, 16, halve it and square the result. You should get 64. Add this to both sides of the equation to complete the square.

$$x^2 + 16x + 64 = 57 + 64$$

$$x^2 + 16x + 64 = 121$$

Factor the perfect-square trinomial.

$$(x + 8)^2 = 121$$

$$x + 8 = \pm 11$$

$$x = -8 \pm 11$$

$$x = 3 \quad \text{or} \quad x = -19$$

Question 4

A quadratic polynomial function is shown below in standard form.

$$y = 3x^2 - 24x + 40$$

Express the function in **vertex form** and identify the **location** of the vertex.

From the first two terms, factor out 3 .

$$y = 3(x^2 - 8x) + 40$$

We want a perfect square. Halve -8 and square the result to get 16 . Add and subtract that value inside the parentheses.

$$y = 3(x^2 - 8x + 16 - 16) + 40$$

Factor the perfect-square trinomial.

$$y = 3((x - 4)^2 - 16) + 40$$

Distribute the 3.

$$y = 3(x - 4)^2 - 48 + 40$$

Combine the constants to get **vertex form**:

$$y = 3(x - 4)^2 - 8$$

The vertex is at point $(4, -8)$.